

The formula for finding the inverse of a matrix is  $A^{-1} = \frac{1}{\det A} \begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$ . Use this to find the inverse of each matrix if possible.

13.)  $\begin{bmatrix} 1 & 3 \\ 1 & 1 \end{bmatrix}$

$$\det A = 1(1) - (1)(3) \\ 1 - 3 = -2$$

$$\frac{1}{-2} \begin{bmatrix} 1 & -3 \\ -1 & 1 \end{bmatrix}$$

$$A^{-1} = \begin{bmatrix} -0.5 & 1.5 \\ 0.5 & -0.5 \end{bmatrix}$$

14.)  $\begin{bmatrix} 6 & 3 \\ 9 & 10 \end{bmatrix}$

$$\det A = 6(10) - 9(3) \\ 60 - 27 = 33$$

$$A^{-1} = \frac{1}{33} \begin{bmatrix} 10 & -3 \\ -9 & 6 \end{bmatrix}$$

$$A^{-1} = \begin{bmatrix} 10/33 & -1/11 \\ -3/11 & 2/11 \end{bmatrix}$$

15.) Use your calculator to find the inverse  $A^{-1}$ .

$$\begin{bmatrix} -2 & 2 & -1 \\ 3 & -5 & 4 \\ 5 & -6 & 4 \end{bmatrix}$$

$$A^{-1} = \begin{bmatrix} 4 & -2 & 3 \\ 8 & -3 & 5 \\ 7 & -2 & 4 \end{bmatrix}$$

Perform the indicated operations.

$$A = \begin{bmatrix} 2 & 3 & -1 \\ 0 & 7 & -11 \\ 3 & 4 & 1 \end{bmatrix} \quad B = \begin{bmatrix} 8 & -2 & -7 \\ 9 & 0 & 0 \\ -10 & 3 & -3 \end{bmatrix}$$

16.)  $B - A$

$$\begin{bmatrix} 6 & -5 & -6 \\ 9 & -7 & 11 \\ -13 & -1 & -4 \end{bmatrix}$$

17.)  $2A + 3B$

$$\begin{bmatrix} 28 & 0 & -23 \\ 27 & 14 & -22 \\ -24 & 17 & -7 \end{bmatrix}$$

18.)  $-(2A + B)$

$$\begin{bmatrix} -12 & -4 & 9 \\ -9 & -14 & 22 \\ 4 & -11 & 2 \end{bmatrix}$$

Solve for x.

19.)  $\begin{vmatrix} 2 & -1 \\ 4 & x \end{vmatrix} = 10$

$$2x - (-4) = 10$$

$$2x + 4 = 10$$

$$2x = 6$$

$$x = 3$$

20.)  $\begin{bmatrix} 1 & 2x-1 \\ 3 & 5 \end{bmatrix} = \begin{bmatrix} 1 & 19 \\ 3 & 5 \end{bmatrix}$

$$2x - 1 = 19$$

$$2x = 20$$

$$x = 10$$